STAFF SUMMARY SHEET

	TO	ACTION	SIGNATURE (Surname), GRADE AND DATE		TO	ACTION	SIGNATURE (Surname), GRADE AND DATE
1	DFCS	sig	David A. Gluhm, 06, 22MAR12	6			
2	DFER	approve	Cum CIV 22 MAR12	7			
3	DFCS	action	Steve Hadfield	8			
4				9			
5				10			

SURNAME OF ACTION OFFICER AND GRADE	SYMBOL	PHONE	TYPIST'S INITIALS	SUSPENSE DATE
Steve Hadfield, Civ	DFCS	333-7474	smh	

SUBJECT: Clearance for Material for Public Release — USAFA-DF-PA-201

DATE: 20120321

SUMMARY

1. PURPOSE. To provide security and policy review on the document at Tab 1 prior to release to the public.

2. BACKGROUND.
Author: Steve Hadfield

Title: Integrating Security and Software Assurance Concepts and Mindsets in an Undergraduate Computer Science Curriculum

Circle one: Abstract Tech Report Journal Article Speech Paper (Presentation) Poster

Thesis/Dissertation Book Other: _____

Check all that apply (For Communications Purposes):

[] CRADA (Cooperative Research and Development Agreement) exists

[] Photo/ Video Opportunities [] STEM-outreach Related [] New Invention/ Discovery/ Patent

Description: Invited talk at the Sofware Assurance Forum, Mclean, VA

Release Information:

Previous Clearance information: (If applicable): N/A

Recommended Distribution Statement: (Distribution A, Approved for public release, distribution unlimited.)

3. DISCUSSION. None.

4. VIEWS OF OTHERS. The Department Research Director has reviewed this paper and recommends it for public release.

5. RECOMMENDATION. Sign coord block above indicating document is suitable for public release. Suitability is based solely o the document being unclassified, not jeopardizing DoD interest, and accurately protraying official policy.

STEVEN M. HADFIELD
Associate Professor

1 Tab
Presentation for approval

Integrating Software Assurance and Secure Programming Concepts and Mindsets into an Undergraduate Computer Science Program

Striving to Achieve the Goals of the SEI/CERT Software Assurance Curriculum Project (Undergraduate)

Steve Hadfield
U.S. Air Force Academy, Department of Computer Science

Realization

In an outcome-based curriculum,
some outcomes need to be purposefully developed across courses and years.

Result

A retrospective, outcome-based look at an existing curriculum (Felder & Brent)

Key Cross Curricular Initiative

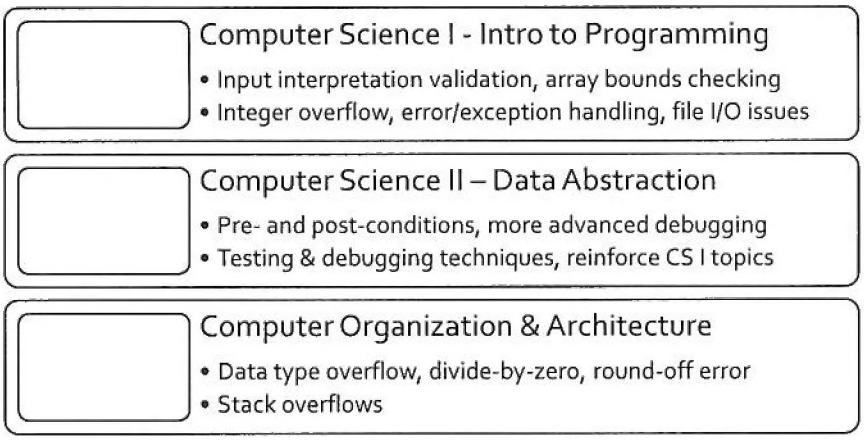
Software Engineering Discipline	• Needs Analysis, Requirements Elaboration, Design • Testing Rigor, Quality Assurance
Ethical, Legal, Social Issues	• Moral Frameworks & Decision Making • Ethical Codes (IEEE, ACM, Software Engineering)
Research Skills	•Literature Review, Framing/Scoping Topics, Hypotheses • Investigation, Support of Conclusion, Reporting
Communications Skills	• Oral Presentations • Written Communications
Team Work	• Team Building, Team Maintenance • Pair Programming, Four-Five Member Team Dynamics
Security & Software Assurance	• Secure Programming • Cyber Security

Security & Software Assurance

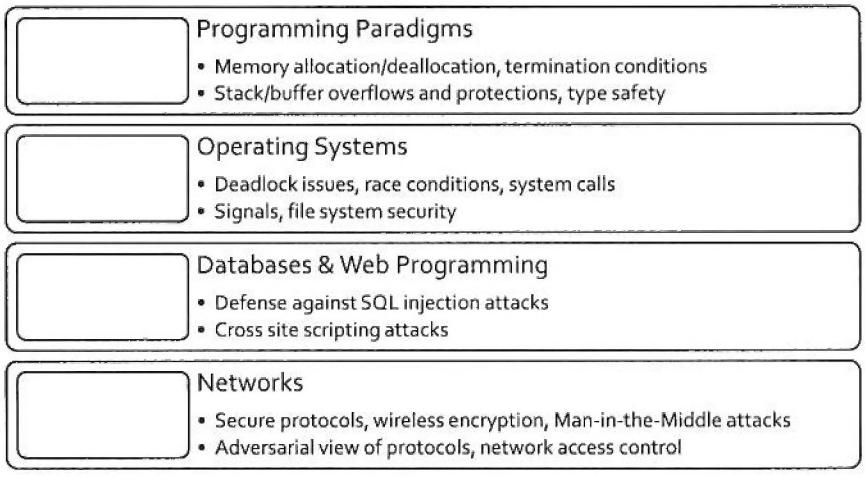
SEI/CERT SwA Curriculum
Computer Science I
Computer Science II
Intro to Computer Security
Software Security Engineering
Software Quality Assurance
Software Assurance Analytics
Software Assurance Capstone

USAFA Computer Science
Computer Science I
Computer Science II
Computer Security & Information Warfare
Software Engineering I
Software Engineering II

Security & Software Assurance Initiative Sophomore Year



Security & Software Assurance Initiative Junior Year



Security & Software Assurance Initiative Senior Year

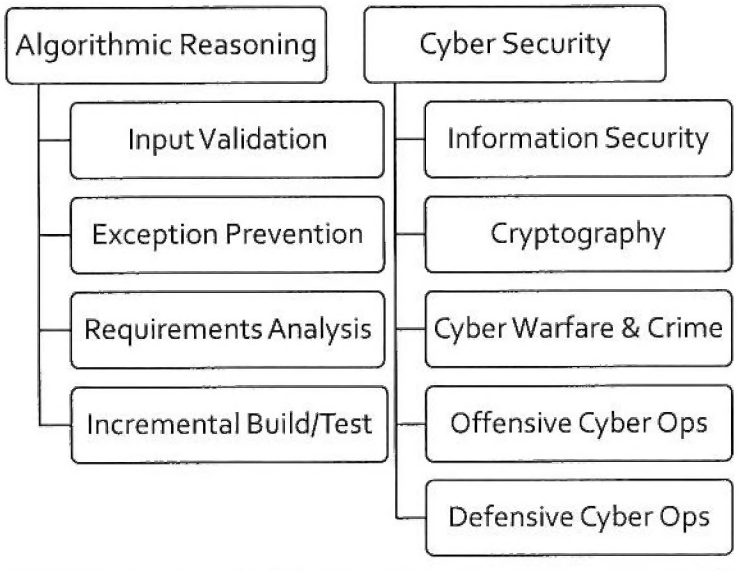
Languages & Machines (compilers & language theory)
- Type checking mechanisms, array bounds checking mechanisms
- Translation to machine language

Computer Security & Information Warfare
- Security & threat models
- Range of security strategies and techniques

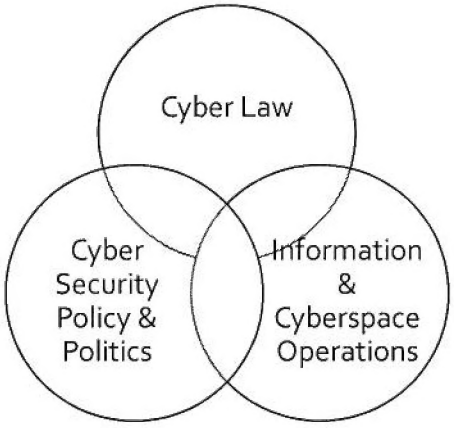
Software Engineering I
- Security requirements, security analysis of system design, risk management
- Formal test plans/procedures/reports
- Integration/system/regression/smoke/stress/security testing

Software Engineering II
- Introduction to Formal Methods
- Reengineering & forward engineering

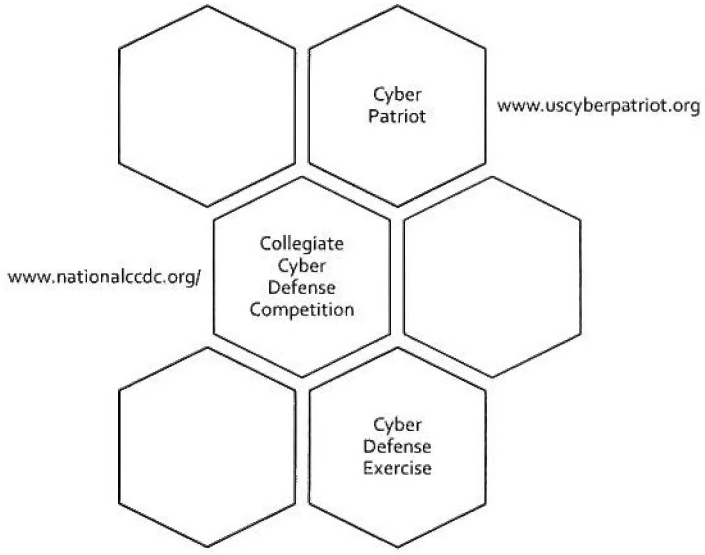
Software Assurance & Security for ALL



Enrichment Activities
Interdisciplinary Courses



Enrichment Activities
Defensive Competitions



Vectors

Professionals	• Comp Sci, Info Sys, Info Tech, MIS • Curricular & pedagogical resources
General Awareness	• Personal awareness & defense • Bigger issues – enterprise, national, global
Specialization	• Defense is the 'hard job' • Funding for developing experts

Questions?

Steve Hadfield

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